CLAIMS

1. A method for determining a prognosis in a patient afflicted with cancer comprising determining the expression level of the c-*fyn* gene in a sample from the patient, an increased level of c-*fyn* expression being indicative of an unfavorable prognosis.

2. A method for grading a cancer comprising determining the level of expression of the c-*fyn* gene in a sample of tissue from a patient suffering from cancer, the level of expression being indicative of the grade of the cancer.

3. A method for determining the metastatic potential of a cancer in an afflicted patient comprising determining the level of c-*fyn* expression in a sample from the patient, an increased expression level being indicative of the metastatic potential of said tumor.

4. A method according to claim 1, 2 or 3 wherein determining the expression level of the c-*fyn* gene comprises determining the relative number of RNA transcripts of the gene.

5. A method according to claim 1, 2 or 3 wherein determining the expression level of the c-*fyn* gene comprises determining the relative level of the *FYN* protein.

6. A method according to claim 5 wherein the level of the *FYN* protein is determined by contacting the sample with an antibody which binds the *FYN* protein.

7. A method according to claim 1 wherein the cancer is a breast cancer.

8. A method according to claim 1 wherein the cancer is a prostate cancer.

9. A method according to claim 1 wherein the cancer is an ovarian cancer.

10. A method according to claim 1 wherein the cancer is a lung cancer.

11. A method for determining a prognosis in a patient afflicted with cancer comprising determining the level of activated STAT-3 protein in a sample from the patient, an increased level of said protein being indicative of an unfavorable prognosis.

12. A method for grading a cancer comprising determining the level of activated STAT-3 protein in a sample of tissue from a patient suffering from cancer, the level of said activated protein being indicative of the grade of the cancer.

13. A method for determining the metastatic potential of a cancer in an afflicted patient afflicted comprising determining the level of activated STAT-3 protein in a sample from the patient, an increased level of said protein being indicative of the metastatic potential of said tumor.

14. A method according to claim 11, 12 or 13 wherein determining the level of activated STAT-3 protein comprises determining the relative level of STAT-3 DNA binding activity.

15. A method according to claim 11, 12 or 13 wherein determining the level of activated STAT-3 protein comprises determining the relative level of phosphorylated STAT-3 protein.

16. A method according to claim 15 wherein the level of phosphorylated STAT-3 protein is determined by contacting the sample with an antibody which binds said phosphorylated protein.

17. A method for identifying compounds that inhibit cell proliferation comprising measuring the ability of a test compound to inhibit Src kinase-mediated STAT phosphorylation, wherein inhibitors of cell proliferation are identified as inhibitors of Src-mediated STAT phosphorylation.

18. The method of claim 17 wherein the Src kinase is selected from the group consisting of c-Src, c-Fyn, and c-Fgr.

19. The method of claim 18 wherein the Src kinase is c-Src.

20. The method of claim 17 wherein the STAT is STAT-3.

21. The method of claim 17 wherein the STAT is STAT-5.

22. The method of claim 17 wherein Src-mediated STAT phosphorylation is measured in a recombinant cell.

23. The method of claim 22 wherein the cell is a fission yeast cell.

24. The method of claim 22 wherein the cell is a mammalian cell.

25. The method of claim 17 wherein Src-mediated STAT phosphorylation is measured in a cell free system.

26. The method of claim 17 wherein the level of inhibition of STAT phosphorylation is measured as the level of expression of a reporter gene under the control of a STAT dependent promoter element.

27. The method of claim 26 wherein the reporter gene encodes green fluorescent protein (GFP).

28. The method of claim 17 wherein the level of STAT phosphorylation is measured directly.

29. The method of claim 17 wherein the level of STAT phosphorylation is measured in a DNA binding assay.